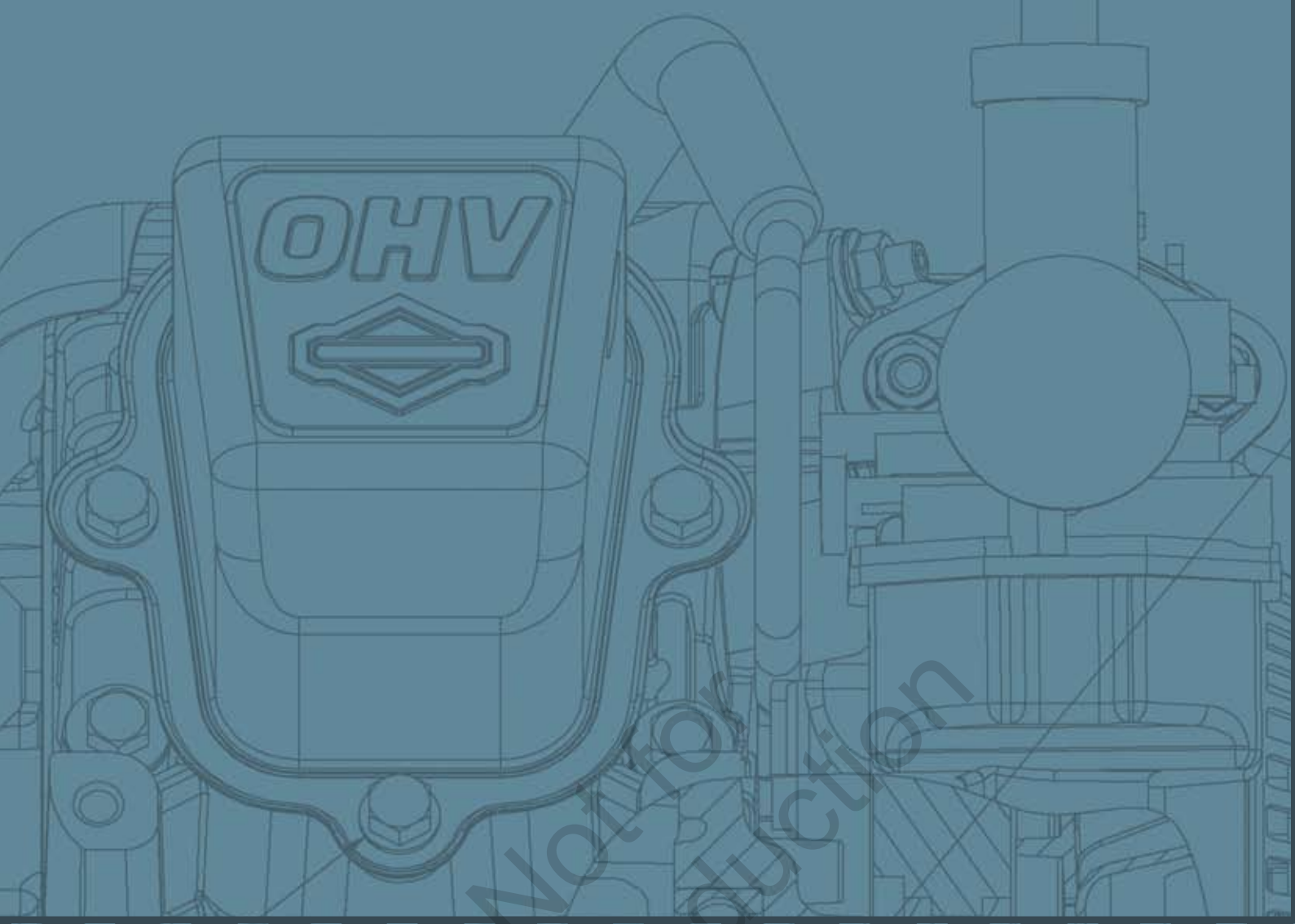

BRIGGSRACING.com

MS-5702-4/08

BRIGGS&STRATTON
CORPORATION
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MILWAUKEE, WI 53201 USA
414 259 5333

BRIGGS&STRATTON
THE POWER WITHIN™

FORMULA II™

Version 4/08

Racing Performance Catalog & Reference Guide

BRIGGS&STRATTON RACING™

TABLE OF CONTENTS

SAFETY

BEFORE OPERATING ENGINE

- Read entire Operating & Maintenance Instructions AND the instructions for the equipment this engine powers.*
- Failure to follow instructions could result in serious injury or death.

THESE INSTRUCTIONS CONTAIN SAFETY INFORMATION TO

- Make you aware of hazards associated with engines
- Inform you of the risk of injury associated with those hazards, and
- Tell you how to avoid or reduce the risk of injury.

The safety alert symbol (⚠) is used to identify safety information about hazards that can result in personal injury.

A signal word (DANGER, WARNING, or CAUTION) is used with the alert symbol to indicate the likelihood and the potential severity of injury. In addition, a hazard symbol may be used to represent the type of hazard.

DANGER
Indicates a hazard which, if not avoided, **will result in death or serious injury.**

WARNING
Indicates a hazard which, if not avoided, **could result in death or serious injury.**

CAUTION
Indicates a hazard which, if not avoided, **might result in minor or moderate injury.**

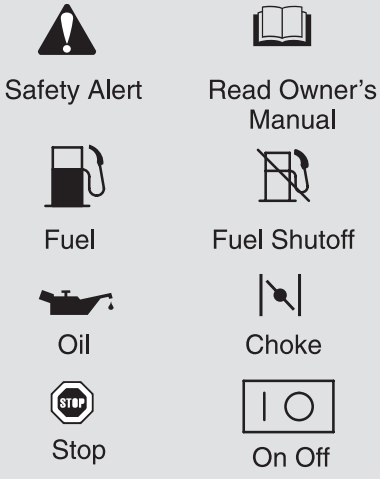
CAUTION, when used **without** the alert symbol, indicates a situation that **could result in damage to the engine.**

⚠ WARNING ⚠

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

HAZARD SYMBOLS AND MEANINGS

THE INTERNATIONAL SYMBOLS USED ON THE ENGINE OR IN THIS MANUAL INCLUDE:



⚠ WARNING

Engines give off carbon monoxide, an odorless, colorless, poison gas.

Breathingcarbon monoxide can cause nausea, fainting or death.

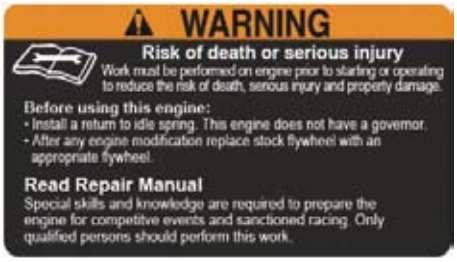
- Start and run engine outdoors.
- Do not start or run engine in enclosed area, even if doors or windows are open.

⚠ WARNING

Rapid retraction of starter cord (kickback) will pull hand and arm toward engine faster than you can let go.

Broken bones, fractures, bruises or sprains could result.

- When starting engine, pull cord slowly until resistance is felt, then pull rapidly.
- Remove all external equipment/engine loads before starting engine.
- Direct coupled equipment components such as, but not limited to, blades, impellors, pulleys, sprockets, etc., must be securely attached.



* Briggs & Stratton does not necessarily know what equipment this engine will power. For that reason, you should carefully read and understand the operating instructions for the equipment on which your engine is placed.

WARNING

Gasoline and its vapors are extremely flammable and explosive.

Fire or explosion can cause severe burns or death.

WHEN ADDING FUEL

- Turn engine OFF and let engine cool at least 2 minutes before removing gas cap.
- Fill fuel tank outdoors or in well-ventilated area.
- Do not overfill fuel tank. Fill tank to approximately 1-1/2 inches below top of neck to allow for fuel expansion.
- Keep gasoline away from sparks, open flames, pilot lights, heat, and other ignition sources.
- Check fuel lines, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.

WHEN STARTING ENGINE

- Make sure spark plug, muffler, fuel cap and air cleaner are in place.
- Do not crank engine with spark plug removed.
- If fuel spills, wait until it evaporates before starting engine.
- If engine floods, set choke to OPEN/RUN position, place throttle in FAST and crank until engine starts.

WHEN OPERATING EQUIPMENT

- Do not tip engine or equipment at angle which causes gasoline to spill.
- Do not choke carburetor to stop engine.

WHEN TRANSPORTING EQUIPMENT

- Transport withfuel tank EMPTY or with fuel shut-off valve OFF.

WHEN STORING GASOLINE OR EQUIPMENT WITH FUEL IN TANK

- Store away from furnaces, stoves, water heaters or other appliances that have pilot light or other ignition source because they can ignite gasoline vapors.

WARNING

Unintentional sparking can result in fire or electric shock.

Unintentional start-up can result in entanglement, traumatic amputation, or laceration.

BEFORE PERFORMING REPAIRS OR ADJUSTMENTS

- Disconnect spark plug wire and keep it away from spark plug.
- Disconnect battery at negative terminal (only engines with electric start).

WHEN TESTING FOR SPARK

- Use approved spark plug tester.
- Do not check for spark with spark plug removed.

WARNING

Running engines produce heat. Engine parts, especially muffler, become extremely hot.

Severe thermal burns can occur on contact.

Combustible debris, such as leaves, grass, brush, etc. can catch fire.

- Allow muffler, engine cylinder and fins to cool before touching.
- Remove accumulated combustibles from muffler area and cylinder area.
- Install and maintain in working order a spark arrester before using equipment on forest-covered, grass-covered, brush-covered unimproved land. The state of California requires this (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal land.

WARNING

Rotating parts can contact or entangle hands, feet, hair, clothing, or accessories.

Traumatic amputation or severe laceration can result.

- Operate equipment with guards in place.
- Keep hands and feet away from rotating parts.
- Tie up long hair and remove jewelry.
- Do not wear loose-fitting clothing, dangling drawstrings or items that could become caught.

WARNING

Starting engine creates sparking.

Sparking can ignite nearby flammable gases.

Explosion and fire could result.

- If there is natural or LP gas leakage in area, do not start engine.
- Do not use pressurized starting fluids because vapors are flammable.

WARNING

Replacement parts for fuel system (cap, hoses, tanks, filters, etc.) must be the same as original parts, otherwise fire can occur.

WARNING

DO NOT strike the flywheel with a hammer or hard object because the flywheel may later shatter during operation.

BRIGGS & STRATTON DOES NOT APPROVE OR AUTHORIZE THE USE OF THESE ENGINES ON 3 WHEEL ALL TERRAIN VEHICLES (ATVS), MOTOR BIKES, FUN/RECREATIONAL GO-KARTS, OR AIRCRAFT PRODUCTS. USE OF THESE ENGINES IN SUCH APPLICATIONS COULD RESULT IN PROPERTY DAMAGE, SERIOUS INJURY (INCLUDING PARALYSIS), OR EVEN DEATH. THIS ENGINE REQUIRES SPECIAL TECHNICAL EXPERTISE AND PREPARATION BEFORE IT CAN BE USED IN COMPETITIVE EVENTS.

WORLD FORMULA

GENERAL SPECS

Model: 124335
Type: 8105
Displacement: 12.48 Cu. in. - 206 cc
Design: Slant, 30 degree, Overhead Valve, Electric Start
Bore: 2.6875/2.6885 in.
Stroke: 2.2 in.
Compression Ratio: 9.5 to 1
Factory Timing: 29 degrees BTDC

SPECIAL TOOL REQUIREMENTS

General Model 12 Manual Part No. 272147
PVL Flywheel Puller Part No. 19584
Flywheel Wrench Part No. 19433

TORQUE SPECS

DESCRIPTION	WRENCH/SOCKET SIZE	TORQUE
Air Guard	7mm	40-50 lb-in. (4.5-5.6 Nm)
Blower Housing	10mm & 3/8"	60-110 lb-in. (7-12.5 Nm)
Carburetor (to manifold)	10mm	80-110 lb-in. (9-12.4 Nm)
Connecting Rod	T27	140-150 lb-in. (16-17 Nm)
Cylinder Head Bolts	10mm	200-220 lb-in. (20-27 Nm)
Exhaust Brace Screws	10mm	95-125 lb-in. (11-14 Nm)
Exhaust Stud	10mm	95-125 lb-in. (11-14 Nm)
Flywheel Nut	15/16	55-75 ft-lbs. (74.5-101 Nm)
Flywheel Fan	10mm	180-240 lb-in. (20-27 Nm)
Intake (to cylinder)	5mm Allen	70-90 lb-in. (8-10.2 Nm)
Oil Drain Plug	3/8"	100-125 lb-in. (11-14 Nm)
PVL Module	7mm	20-35 lb-in. (2.3-4 Nm)
Rocker Arm Stud	7/16"	90-120 lb-in. (10-14 Nm)
Rocker Arm Plate	10mm	70-90 lb-in. (7.9-10.1 Nm)
Rocker Arm Set Screw	1/8" Allen	50-70 lb-in (5.6-7.9 Nm)
Spark Plug	5/8" Deep	95-145 lb-in. (11-16.4 Nm)
SIde Cover	10mm	95-125 lb-in. (11-14 Nm)
Starter Gear	#2 Phillips	35-53 lb-in. (4-6 Nm)
Top Control Plate	10mm	70-90 lb-in. (8-10 Nm)
Valve Cover	10mm Lower & 3/8"	30-60 lb-in. (3.5-7 Nm)

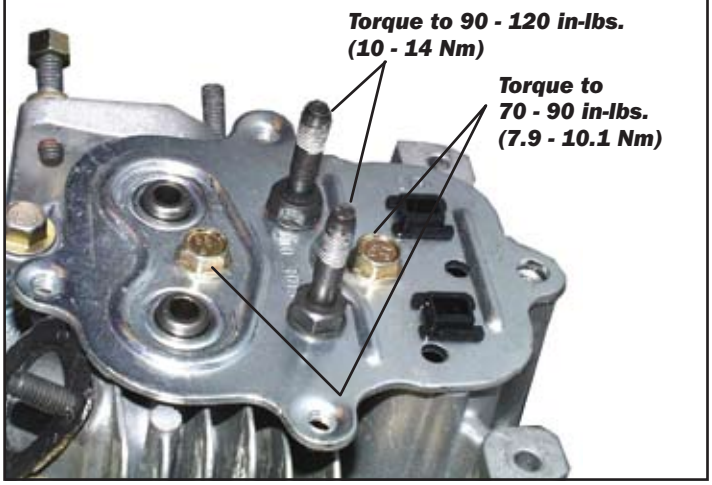
RACING SPECIFICS

PVL™ Ignition Module Gap - .010/.014 (.15/.36mm)
Digital Rev Limiter - 7,000 RPM +/- 50
Spark Plug - Champion™ RG4HC
Fuel Requirements - 98 Octane (RON)
Recommended Oil Capacity - 16 oz., High Grade 30 Weight (Even for initial break-in)
Exhaust System Requirements-50mm x 57mm Flex Coupling, 50/90 Canister Muffler.
Starter System-12 Volts @ 20 Amp Capacity-180 Cold Cranking amps. Refer to your sanctioning body rules for required installation location.

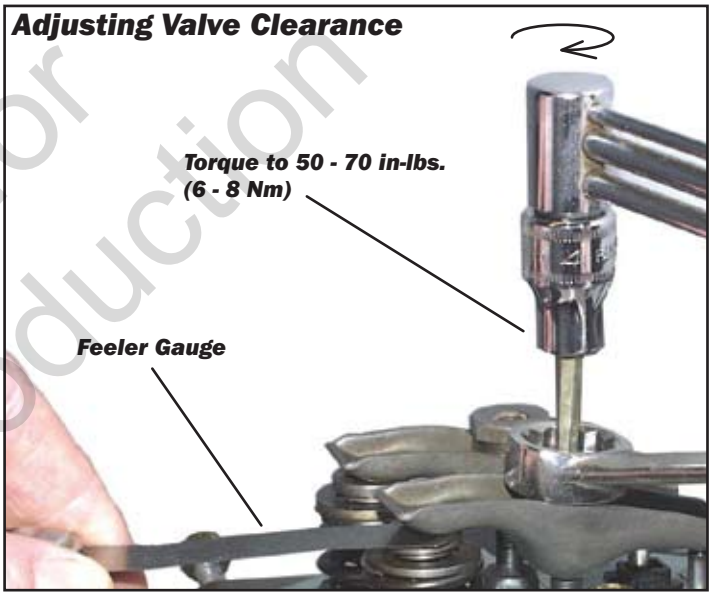
OPTIONAL PERFORMANCE PARTS

High - G/Force Breather Bypass System - Part No. 555688

Installing Cylinder Head Plate



Adjusting Valve Clearance



HIGHLIGHTED FEATURES

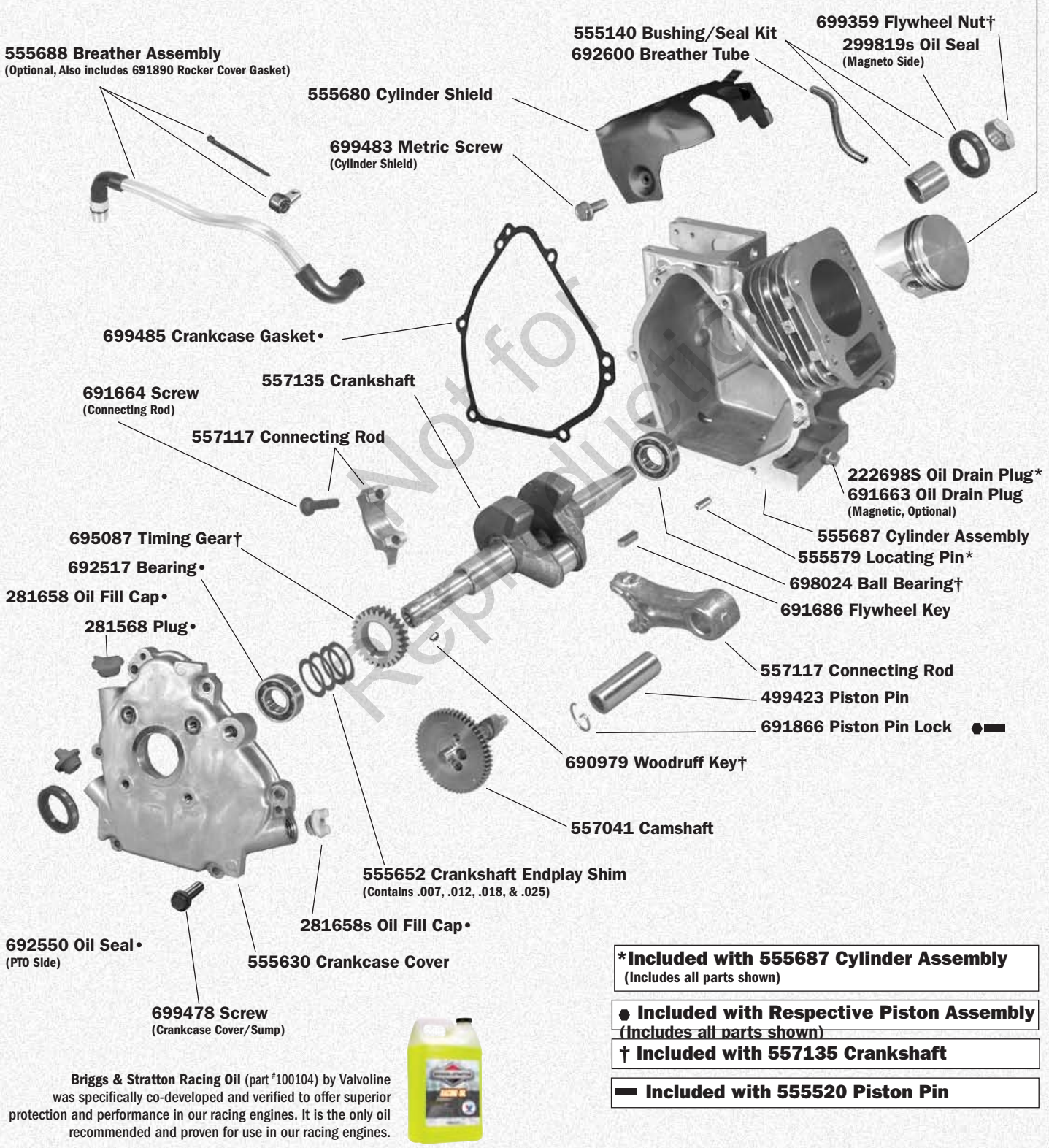
- Dual Ball-Bearing, RACING Reinforced Cylinder
- Billet Rod
- Slotted, Stelite-Faced, Ground Cam w/ Compression Release
- Dual, High-Silicon Valve Springs
- PVL™ Digital Ignition System w/7,100 RPM Limiter
- CNC D-Shape Intake Port
- Walbro™ Round -Slide Carburetor
- Dana™ Fire-Ring Head Gasket
- Racing Crankshaft w/ Induction-Hardened Crankpin
- Green™ Air Filter
- Federal Mogul™ Moly-Coated Cam Ground, Barrel-Faced Piston
- Chrome-Faced, Racing Only Ring Package
- Port-Liner, Exhaust System
- Mikuni™ Fuel Pump
- Noram™ Clutch w/ Quick Change Sprocket Set
- Automotive 3-Piece Valve Retainer System
- Beefy Rocker Arm Stud Nuts

272147 Repair Manual

557121 Piston Assembly
(Std., with File to fit Top Ring)
557122 Piston Assembly
(.10" Over, with File to fit Top Ring)
557123 Piston Assembly
(.20" Over, with File to fit Top Ring)
557124 Piston Assembly
(.30" Over, with File to fit Top Ring)

555664 Ring Set ⬣
(Std.)
555665 Ring Set ⬣
(.10" Over)
555666 Ring Set ⬣
(.20" Over)
555667 Ring Set ⬣
(.30" Over)

55513 Ring Set
(.10" Over - Contains 10 Top Rings)
55514 Ring Set
(.20" Over - Contains 10 Top Rings)
55515 Ring Set
(.30" Over - Contains 10 Top Rings)



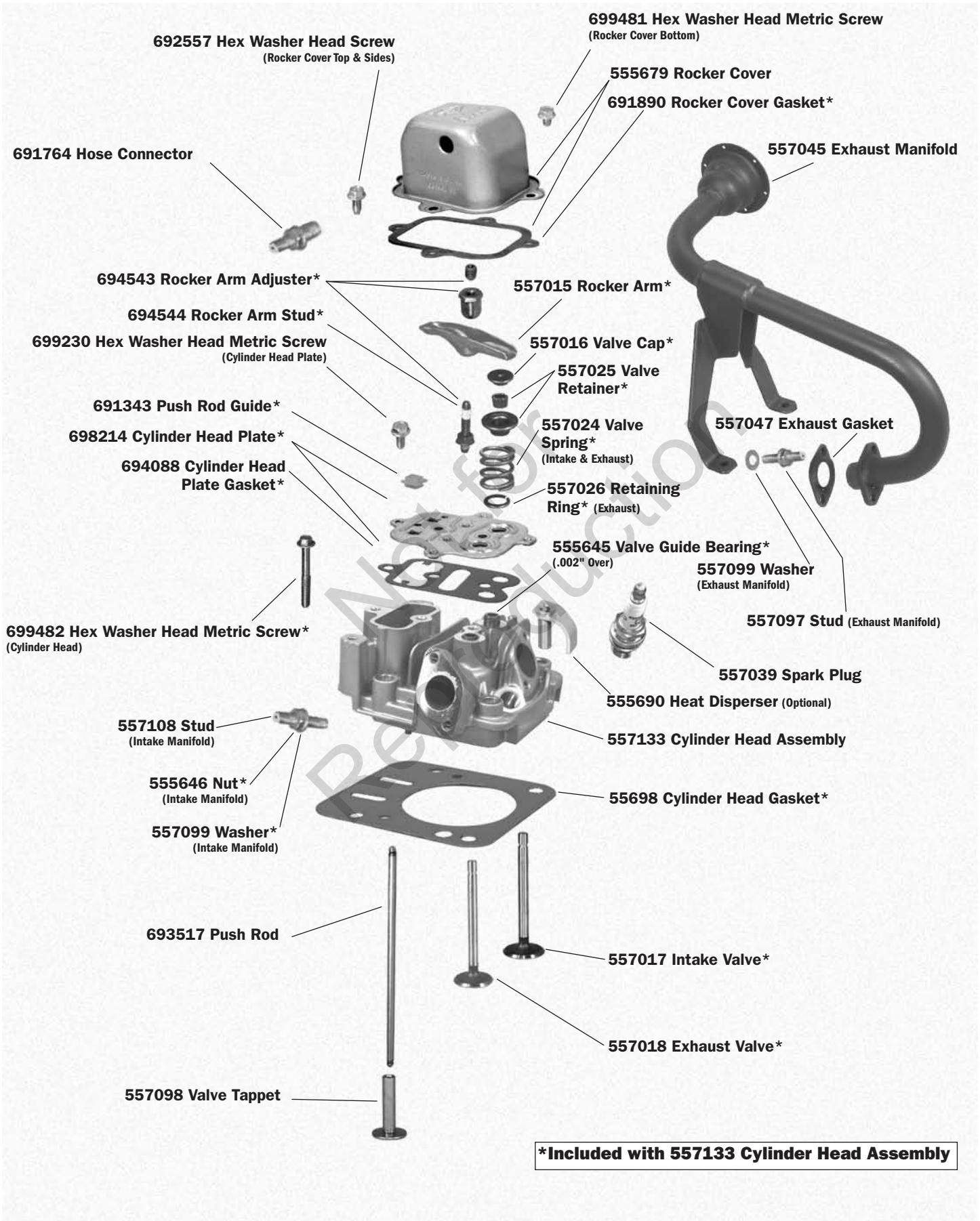
***Included with 555687 Cylinder Assembly**
(Includes all parts shown)

⬣ **Included with Respective Piston Assembly**
(Includes all parts shown)

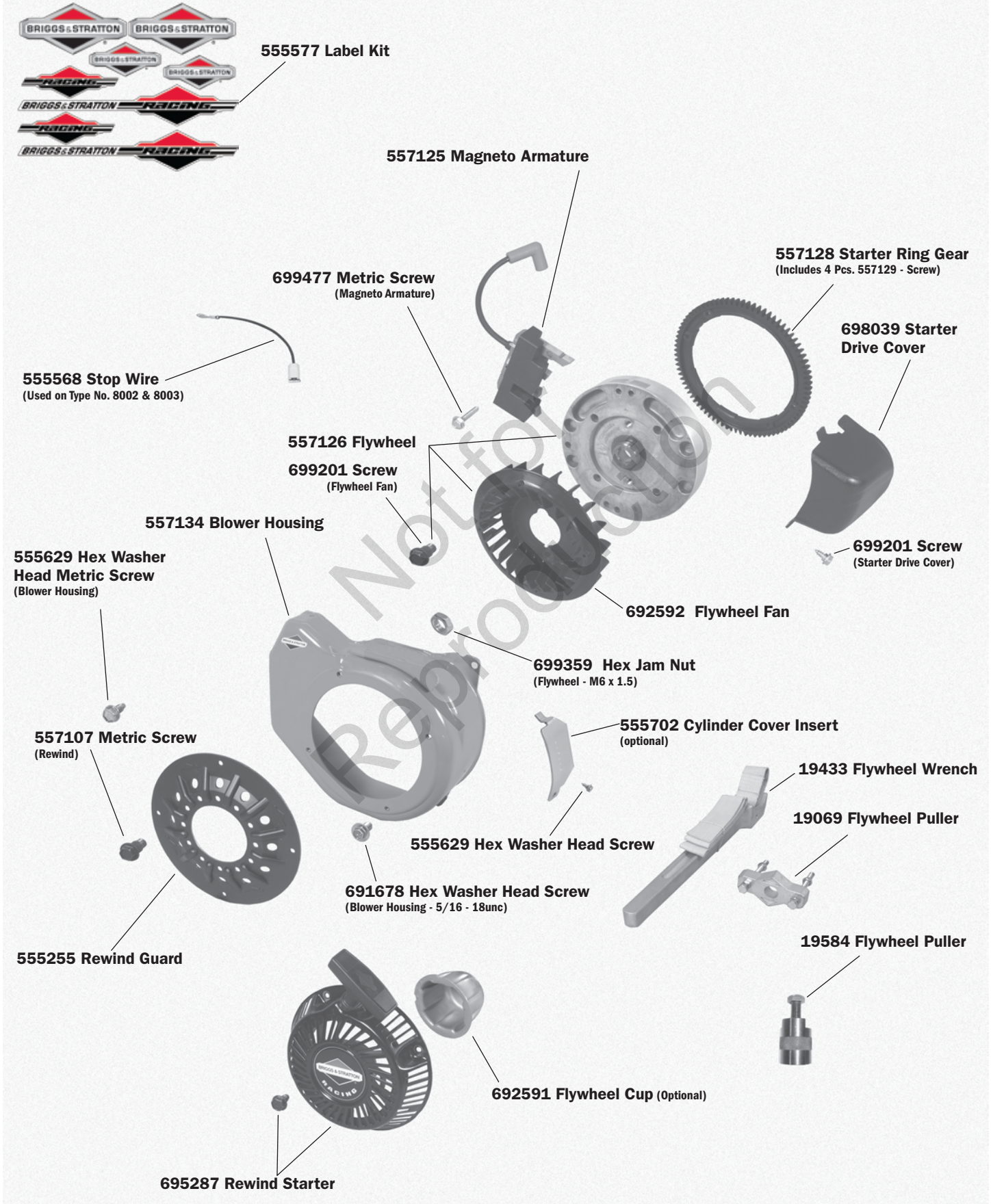
† Included with 557135 Crankshaft

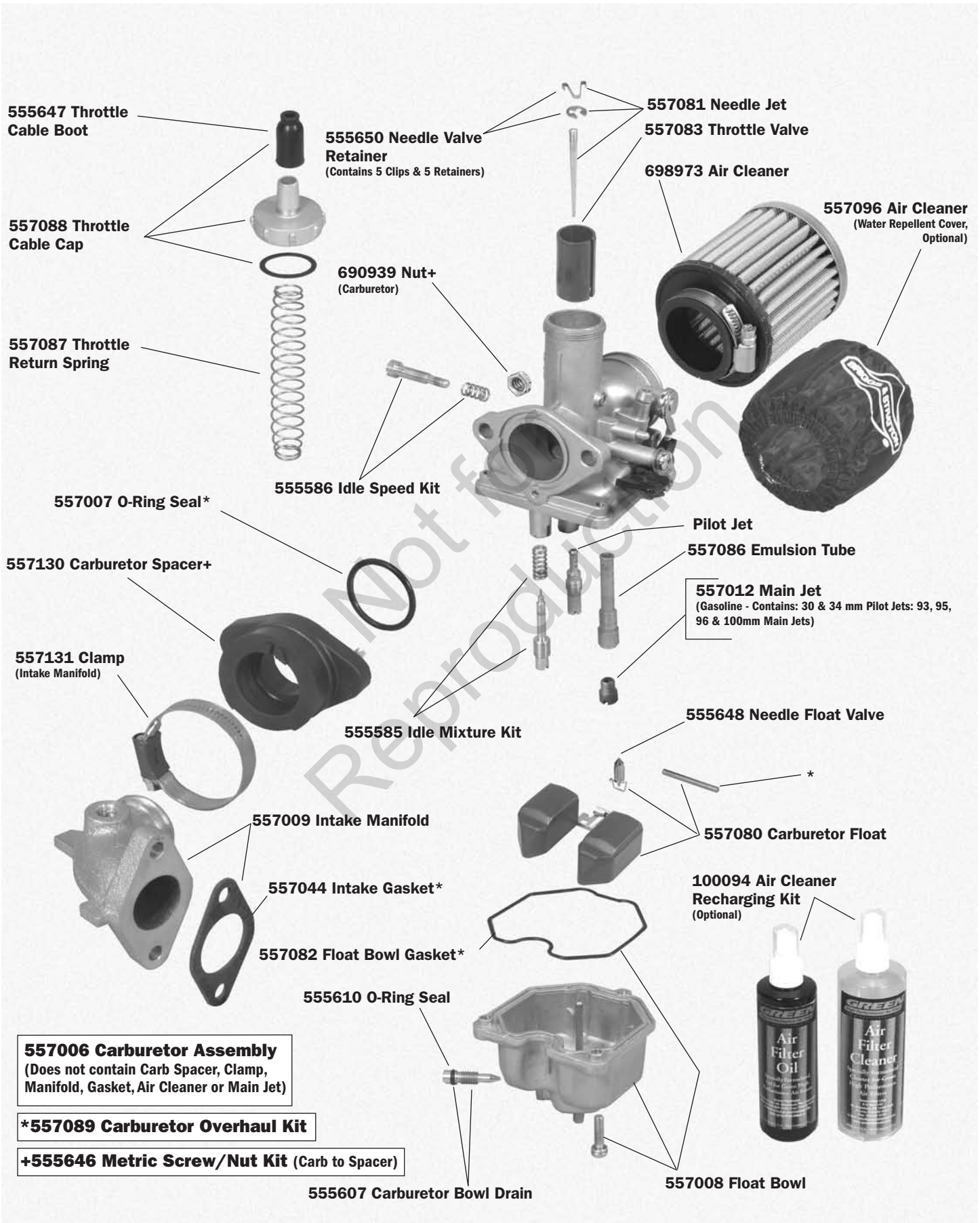
▬ **Included with 555520 Piston Pin**

Briggs & Stratton Racing Oil (part #100104) by Valvoline was specifically co-developed and verified to offer superior protection and performance in our racing engines. It is the only oil recommended and proven for use in our racing engines.

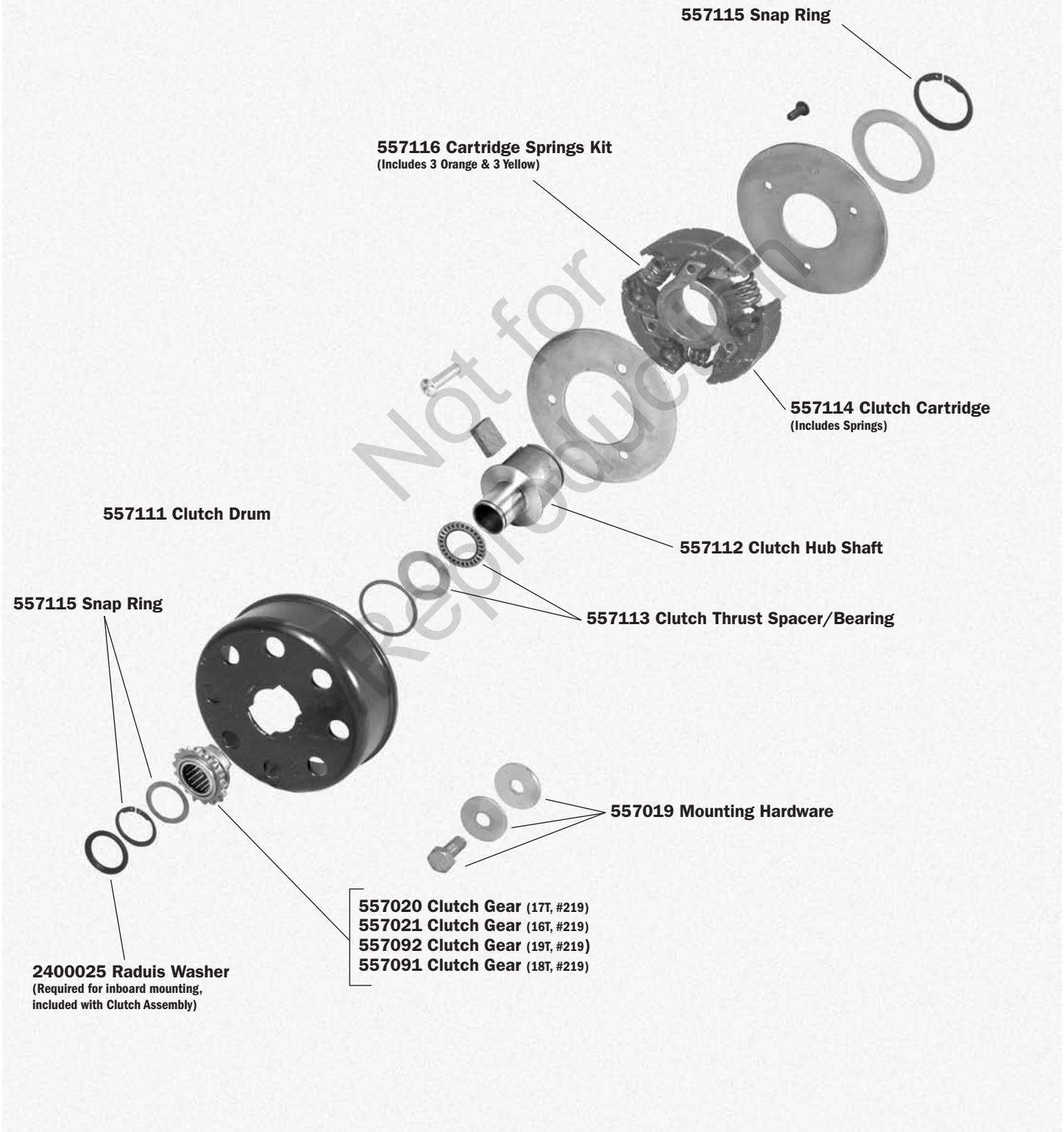


***Included with 557133 Cylinder Head Assembly**



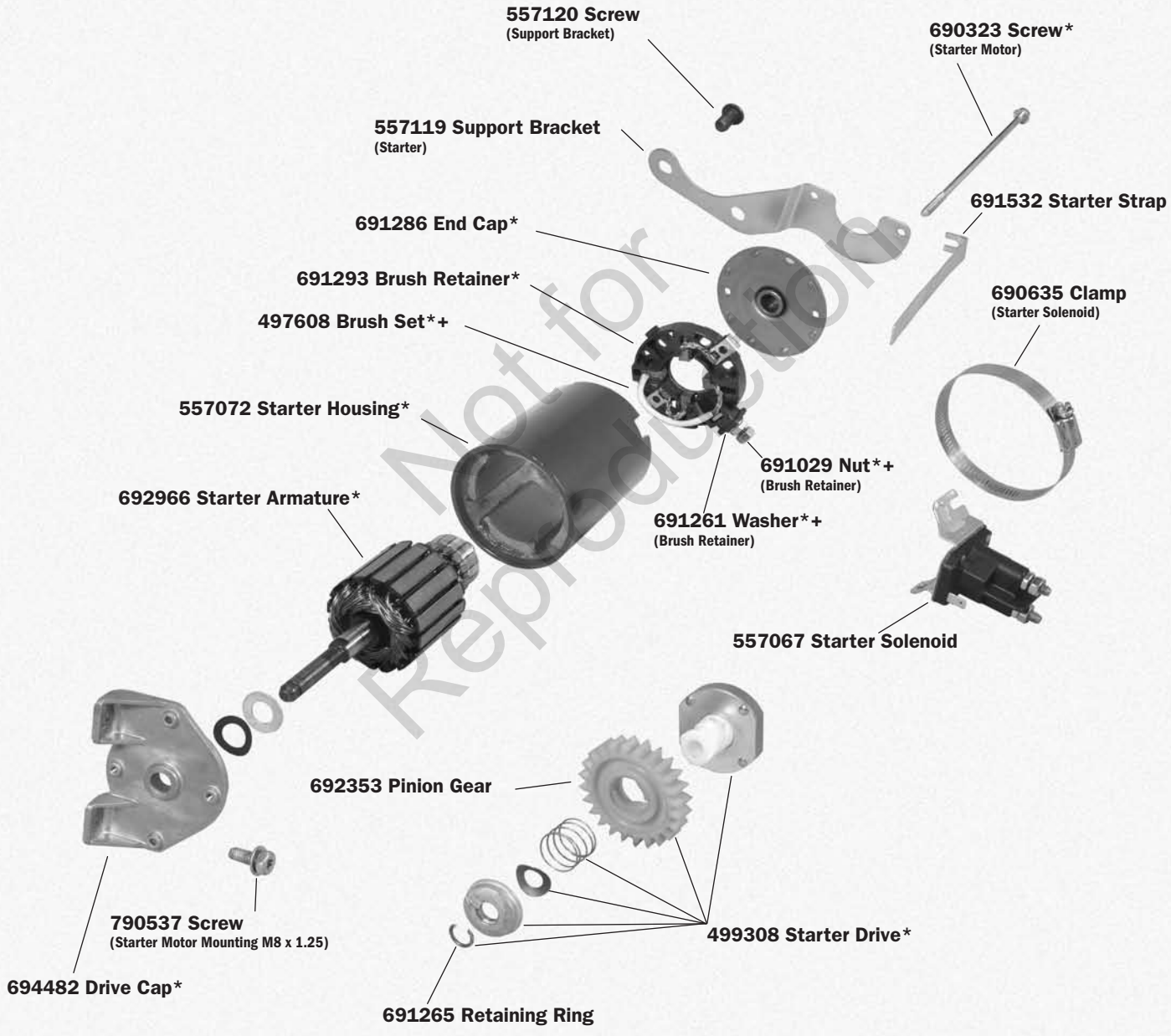


557023 Centrifugal Clutch Assembly
(Does not contain Radius Washer 2400025)



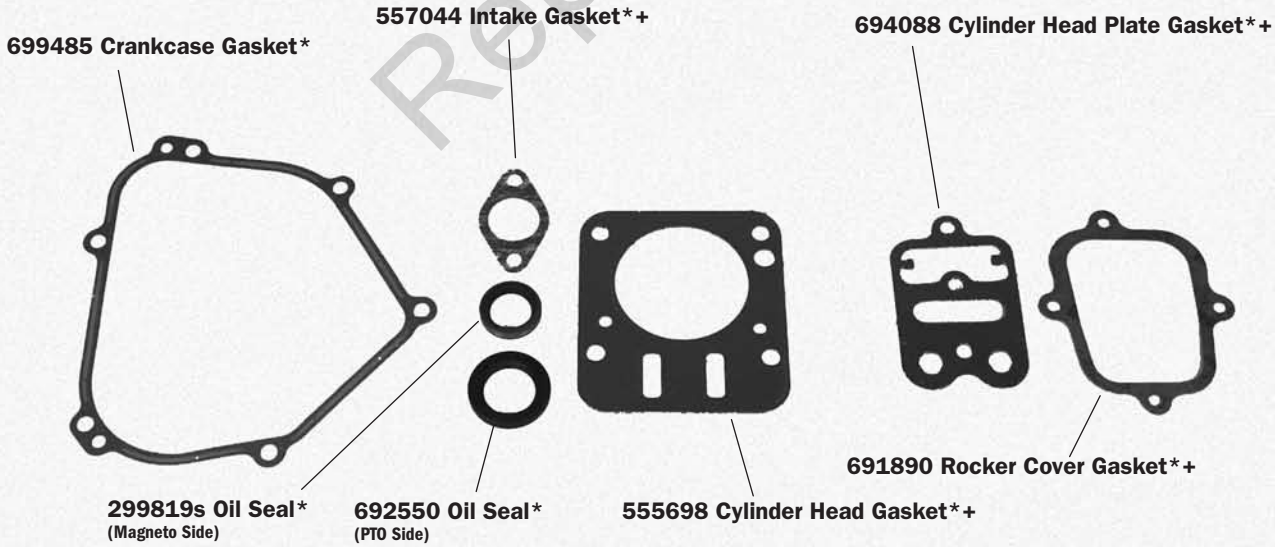
***Included with 557068 Starter Assembly**

+Included with 557073 Brush Retainer

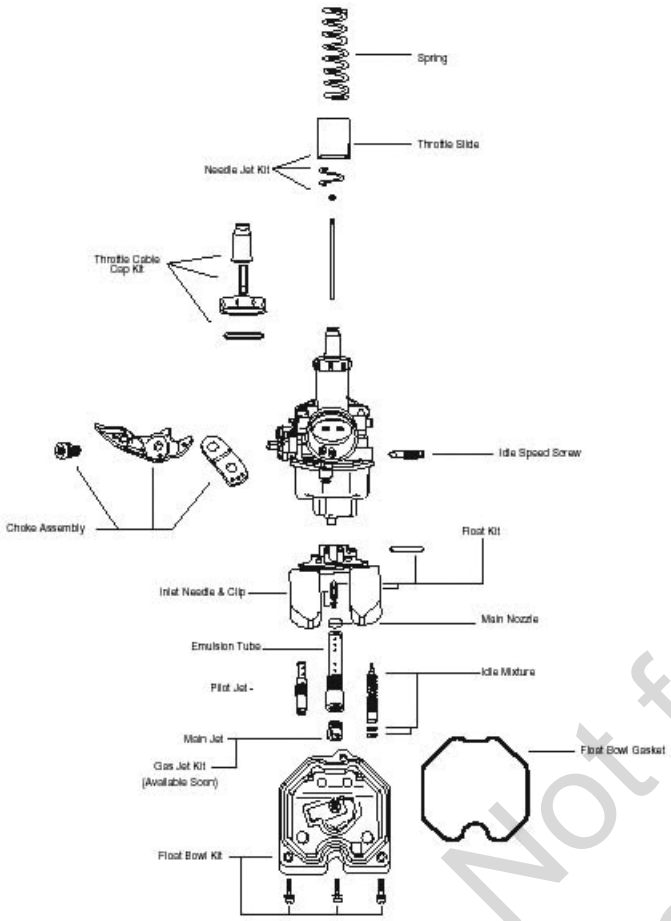


***Included with 557110 Engine Gasket Set**

+ Included with 557027 Valve Gasket Set



PZ26 Carburetor Tuning Guide



Float Height

The float height controls the fuel level in the float bowl, which can also effect carburetor performance. Set float height according to specification before any other tuning. The float height may need to be adjusted for best performance on different track types.

Idle / Low Speed

Tuning of the engine at idle and low speeds is accomplished by adjusting the Idle Mixture Screw or changing the size of the Pilot Jet (also called Slow Jet). The jet size or diameter in millimeters is stamped on the jet (37 = .37mm orifice). The Idle Mixture Screw is a fuel adjustment, so closing the screw or turning it clockwise will lean the fuel mixture, and opening the screw or turning it counterclockwise will richen the fuel mixture.

To adjust the Idle Mixture Screw proceed as follows. Turn the Idle Mixture screw in until it lightly seats or stops. Back the screw out the specified number of turns. Warm the engine and set the Idle Speed screw slightly higher than the desired idle rpm. Turn the Idle Mixture screw in or out to obtain the highest rpm. Turn the Idle Speed screw to the desired idle rpm. A slightly rich idle mixture is usually better for acceleration.

If a smooth idle cannot be obtained with the Idle Mixture screw between 1/4 - 2 turns out from closed, a different size Pilot Jet may be needed. The proper size Pilot Jet will allow for smooth acceleration from an idle and steady engine speed up to 1/4 throttle opening.

Midrange / Part Throttle

The Jet Needle primarily controls fuel flow between 1/4 and 3/4 throttle opening. The Jet Needle has five notches and a C-clip on the top of it. To richen the part throttle operation, move the clip to the next lower notch. This will hold the needle farther out of the nozzle. To lean the part throttle operation, move the clip to the next higher position. The highest notch (farthest from the narrow tip) is considered the 1st position. Needle taper reference letters are stamped on the needle for identification.

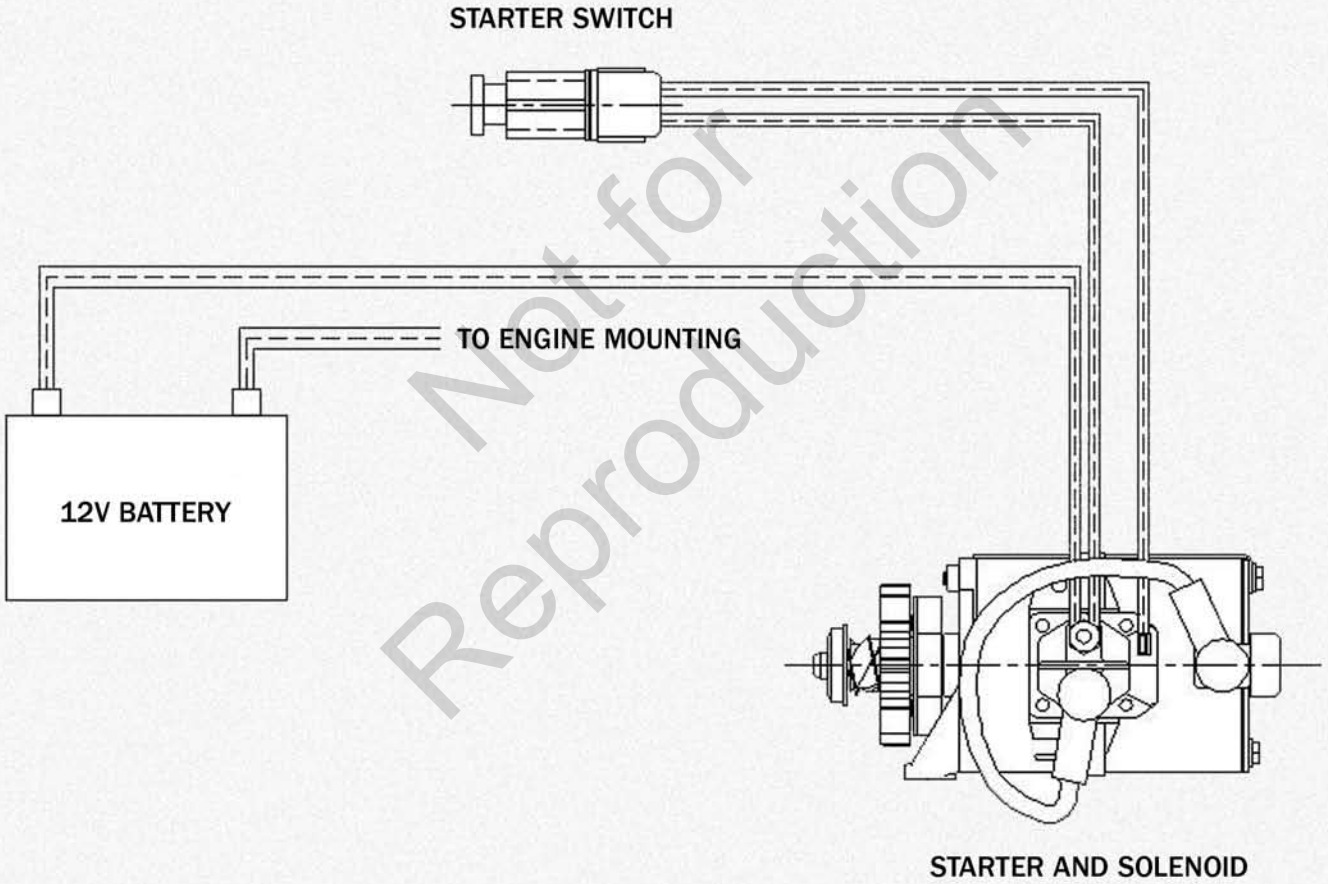
High Speed / Full Throttle

The Main Jet controls the fuel flow at throttle positions of 1/2 to full throttle. The jet size or diameter in millimeters is stamped on the jet. Altitude and weather conditions can effect the engine operation enough to require changing the size of the Main Jet. High air temperature, humidity, or altitude could require a smaller Main Jet. Low temperature, humidity, or altitude would require a larger diameter Main Jet. Running the engine with an improper Main Jet could result in a loss of power, high engine temperatures, or engine damage.

PZ Carburetor General Specifications

Gasoline
Main Jet - #102
Pilot Jet - (Slow Jet) #37
Jet Needle - CDB 4th notch
Main Nozzle diameter - 2.6 mm
Idle Mixture Screw turns out - 1-1/2
Float Height* - 14.0mm
Torque Specifications
Bowl Screws 17 – 20 in-lbs.
Pilot Jet 9 – 12 in-lbs.
Needle Jet 14 – 16 in-lbs.
Main Jet 9 – 11 in-lbs.

Electric Start Wiring Diagram



Log Book

DATE	WORK PERFORMED	SEAL NUMBER	WORK PERFORMED BY
1/31/08	example: Replaced Air Cleaner		DK